HEWLETT PACKARD

HP 9114B Disc Drive
## Operator's Manual
Manuel d'utilisation
Benutzerhandbuch
Manual del Usario
Manuale d'uso

HP 9114B Disc Drive
Operator's Manual

HEWLETT PACKARD

Limited Warranty

One-year Limited Hardware Warranty

Hewlett-Packard warrants this peripheral/accessory against defects in materials and workmanship for a period of one year from receipt by the end user, except when used as part of an HP system. If HP receives notice of such defects during the warranty period, HP will either, at its option, repair or replace products which prove to be defective.

Should HP be unable to repair or replace the product within a reasonable amount of time, Customer's alternate exclusive remedy shall be a refund of the purchase price upon return of the product.

If this product was purchased as part of an HP system in a coordinated shipment, it is warranted against defects in material and workmanship during the same period as the HP system.

Exclusions

The above warranty shall not apply to defects resulting from improper or inadequate maintenance by Customer; customer-supplied software or interfacing; unauthorized modification or misuse; operation outside of the environmental specifications for the product; or improper site preparation and maintenance.

The selection and use of media, supplies, and consumables is the customer's responsibility. Hewlett-Packard reserves the right to exclude from the warranty or service agreement any repairs for damage to HP products which HP reasonably determines or believes were caused by use of non-HP media or cleaning supplies. Hewlett-Packard will, upon request, repair such damage on a time and material basis.

Obtaining Warranty Service

To obtain warranty service, products must be returned to a service facility designated by HP. HP may repair on-site at the option of the customer. Customer is responsible for travel charges when on-site repair is requested.

Warranty service for products purchased as part of a system will be subject to service in accordance with the system support services.

Customer shall prepay shipping charges for products returned to HP for warranty service and HP shall pay for return of the products to customer. However, Customer shall pay all shipping charges, duties, and taxes for products returned to HP from another country.

Warranty Limitations

HP makes no other warranty, either expressed or implied, with respect to this product. HP specifically disclaims the implied warranties of merchantability and fitness for a particular purpose. Some states or provinces do not allow limitations on the duration of an implied warranty, so the above limitation or exclusion may not apply to you. However, any implied warranty of merchantability or fitness is limited to the one-year duration of this written warranty.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state, or province to province.

Exclusive Remedies

The remedies provided herein are customer's sole and exclusive remedies. In no event shall HP be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

HP offers complete service and maintenance worldwide. Maintenance agreements are available for HP peripheral products. Advantages of these agreements to the customer include a fixed annual cost, individualized cost-effective contracts, and a choice of response time. Current rates can be determined by contacting your local HP Sales Office.

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Chapter 1

YOU, THIS MANUAL, AND THE HP 9114B

About This Manual

This manual is divided into three main chapters: "Essentials," Chapter 2, "Things You Might Want to Know," Chapter 3, and "Read This if You Have Problems," Chapter 4. These chapters are constructed to allow you to quickly get into the right section of the manual and find what you need.

Here's what you'll find in this manual.

Essentials — takes you from unpacking the cartons through connecting the disc drive to your system. Turning the system on, verifying proper operation, and inserting a disc into the disc drive are also included.

Things You Might Want to Know — explains the care and handling of the discs and how to use the disc drive.

Read This if You Have Problems — talks more about the selftest and write protect and also explains Media Monitor and errors you can get with your computer. Also included is information on ordering supplies, maintenance, and warranty.

This manual also contains an index and a glossary for your use.

For First Encounters with HP Equipment

If you have just received your HP 9114B Disc Drive and haven't had any previous experience connecting Hewlett-Packard equipment together, please see the chapter titled "Essentials." Then, please read Chapters 3 and 4.

For Experienced HP Users

If you are an experienced HP-IL user, the HP-IL connections are the same as with any other HP-IL device, so you can skip the Essentials chapter (Chapter 2). Sometime in the future you may want to skim through the entire manual.

The HP 9114B Disc Drive

The HP 9114B Disc Drive is a battery operated, electronic storage device. Data and programs from your computer are stored on a removable flexible disc used with the disc drive. The HP 9114B uses a 3 1/2-inch disc providing as much as 710 thousand characters of storage capacity. Additional features include the following.

Media Monitor – Continual monitoring of media (flexible disc) useful life
Battery charge indication – Three light gauge
Low battery indication – Flashing power light (left indicator light on front panel)
Turn-on selftest – OK TO USE indication
Portability – Can be used away from home or office

The HP 9114B Disc Drive uses a 3 1/2-inch flexible disc. The disc is similar to a phonograph record that stores programs and data instead of music. The disc is called a flexible or micro-flexible disc or media. Data is stored on both sides of the disc, and thus the name double-sided disc.

Chapter 2

ESSENTIALS

Unpacking and Checking the Equipment Supplied

The following equipment is supplied with each HP 9114B.

Item	Part Number
One (1 metre) HP-IL cable	82167B
Battery Recharger	Dependent on Location
One Flexible Disc	--
Operator's Manual	09114-90005
Battery Pack	88014B

The HP 9114B contains rechargeable batteries. Please recharge the battery before initial use and keep the battery fully charged to maximize operating time.

If you find any damage, immediately notify your dealer or nearest Hewlett-Packard Sales Office. Also file a claim with the carrier.

A Look at Your Disc Drive

FRONT PANEL

BATTERY POWER INDICATOR (BLINKS FOR LOW BATTERY)
TEST INDICATOR
INSERT DISC HERE
DISC ACCESS LIGHT
DISC EJECT BUTTON

REAR PANEL

POWER ON/OFF SWITCH
BATTERY REMOVAL LATCH
HP-IL CABLE CONNECTION
BATTERY CHARGER CONNECTION
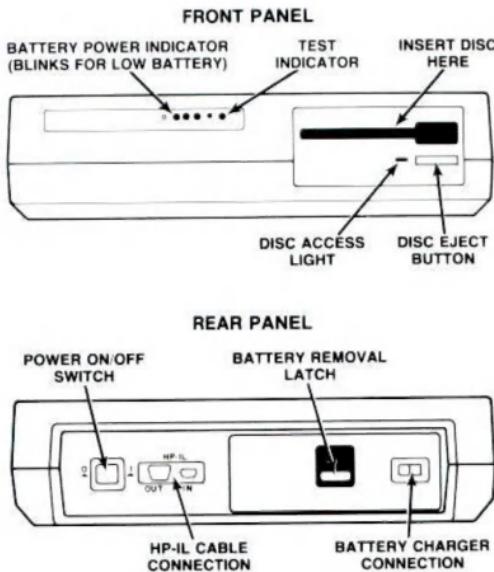
Figure 2-1. Controls and Indicators

Connecting the Disc Drive to Your System

The disc drive is connected to your computer or computing system using the HP 82167 HP-IL cable. Each device must have two cables connected to it, an "In" and an "Out." This is shown next.

DISC DRIVE AND COMPUTER ONLY
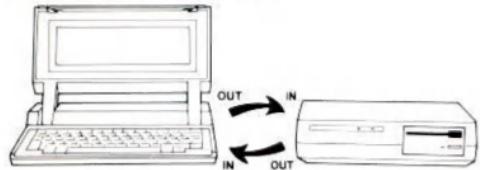
Figure 2-2. Disc Drive Interconnect

DISC DRIVE AND COMPUTER SYSTEM
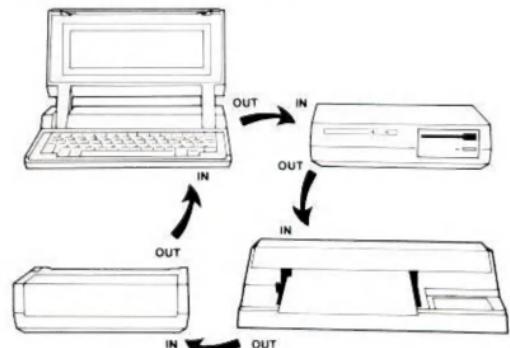
Figure 2-3. System Interconnects

These devices can be connected in any order. The devices can also be in any location.

What is a Flexible Disc?

A flexible disc is similar to a phonograph record that stores programs and data instead of music. The computer can record data and programs on the disc and can later recall the programs and data from the disc. A box of 10 double-sided flexible discs can be ordered using HP part number 92192A.

A Look at the Flexible Disc
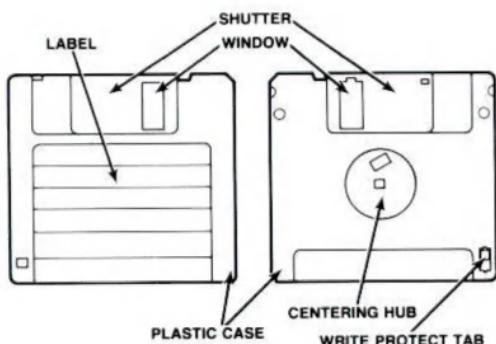
Figure 2-4. Parts of the Flexible Disc

Window and Auto Shutter

The disc drive reads and writes data to and from the disc using a window space which exposes the disc. This window is covered by a metal shutter. The shutter helps protect the disc surface from particles and fingerprints.

The disc drive is equipped with a shutter opener. This means that when the disc is placed in the drive, the shutter is automatically opened, exposing the disc surfaces. You do not need to manually open the shutter before inserting the disc in the drive or close the shutter when removing the disc from the drive.

Centering Hub

On the back of the plastic jacket is a round metal center called the centering hub. The centering hub ensures rapid and accurate positioning when the disc is inserted in the drive.

Using the Write Protect Tab

Write protecting ensures that the disc drive cannot write over or delete information on the disc.

Write protect discs that contain valuable programs and data.

See Figure 2-5.

TO **WRITE PROTECT** THE DISC, SLIDE THE RED PLASTIC BUTTON DOWN.

TO **WRITE DATA TO THE DISC**, SLIDE THE RED PLASTIC BUTTON UP.
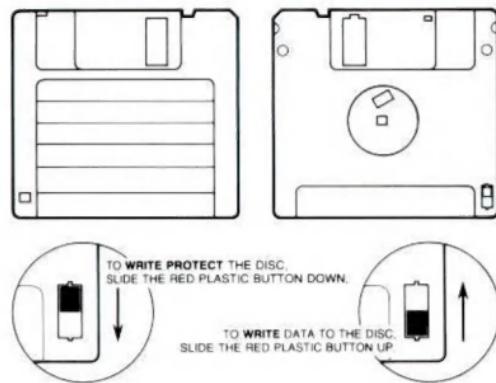
Figure 2-5. Write Protect Tab

Loading the Flexible Disc

To insert and remove flexible discs, perform these steps.

CAUTION

Never turn the disc drive off or remove the disc from the drive when the disc access light is on; doing so can cause loss of data.

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1. Remove the plastic yellow disc or cardboard from the drive by pressing the disc eject button. (**Save this protective disc and insert it in the drive whenever you are transporting the 9114B.**)
2. Hold the disc with the label up (centering hub down).
3. Slide the disc into the drive (shutter side first) until you feel the disc drop into the drive. The disc physically drops about 1/8 inch. Do not force the disc.
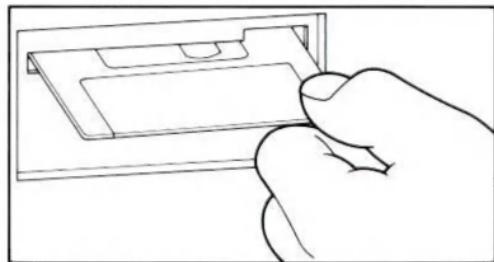
Figure 2-6.   Proper loading of the flexible disc

4. Remove the disc by pressing the disc eject button. Pull the disc straight out.

CAUTION

Disc drive performance and reliability are dependent on the type of media used. Disc drive specifications can be assured only when using HP media. The use of improper media can result in premature disc failure or damage to the disc drive.

On some disc products, HP may qualify other non-HP media. When tested, this media met HP specifications. However, HP does not warrant or support this media and cannot control changes in its specifications or quality. The selection and use of such products is the customer's responsibility. HP reserves the right to exclude from warranty and maintenance agreement coverage any repairs which HP reasonably determines or believes were caused by the use of media not provided by HP. HP will upon request provide such repairs on a time and material basis.

Warranty and maintenance agreement coverage of repairs not caused by the use of non-HP media is unaffected.

TRY IT!

After connecting your system together, you are ready to turn on your disc drive. Locate the power (on/off) button on the back panel. This is a rocker switch with labeling on each side, "0" and "1". Pressing in the rocker on the "0" side turns the drive off. Pressing in on the side labeled "1" turns the drive on. Now, let's turn it on.

Power-on Selftest

A power-on selftest is performed automatically when you turn on the disc drive. The test light (on the right side of the front panel) is on when selftest is in operation. The selftest takes approximately 6 seconds after which the test light goes out. If you have a disc inserted in the drive, read and write testing (involving the disc) takes an additional 5 seconds or a total of approximately 11 seconds. If the test light stays on after the normal testing time, an error within the disc drive has been detected. If this ever happens, please see Chapter 4. Make sure that the disc used in the selftest is not write protected. If this disc is write protected, only the 6 second test is performed.

Use It

System operation information is included as a supplement to this manual. This supplement (P/N 09114-90013) is to be updated as system operation information becomes available. For further information on system operation see the following manuals.

HP 110 Portable Computer Owner's Manual P/N 00090-90004
HP 110 MS-DOS User's Guide P/N 00090-90006
HP Portable Plus "Getting Started" Manual P/N 45711-90009
HP 82401A HP-IL Owner's Manual P/N 82401-90001
HP 75 Owner's Manual P/N 00075-90001
HP 82160A HP-IL Owner's Manual P/N 82160-90001

Installing the AC Recharger

There are three battery indicator lights on the front panel (see Figure 2-1). The battery is 2/3 to fully charged when all three lights are on. If only the left two lights are on, about 1/3 - 2/3 of the battery's capacity remains. If only the leftmost light is on, about 1/3 or less of the charge remains. When only 10 minutes of disc access time remain in the battery, the leftmost light flashes. If you continue to use this battery, the drive will protect your data by not completing read/write operations. Recharge your battery at this time. **To preserve your battery, use your recharger whenever possible.**
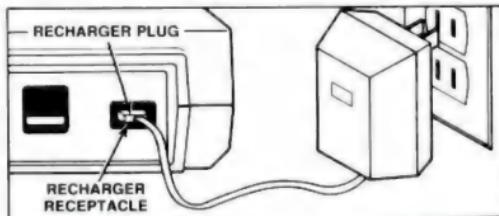
Figure 2-7. Connecting the Recharger

The recharger can be connected to the disc drive at any time. If you connect the recharger during read/write operations (disc access light is on), avoid jarring the drive.

Insert the recharger plug into the recharger receptacle on the back of the disc drive.

Insert the power plug of the recharger into an AC power outlet, after making certain that power is available from the outlet.

You can use the disc drive while the battery pack is charging. **We recommend that you use the recharger whenever possible, even when the battery is fully charged.**

After 5 hours of charging the battery pack will be 80% charged, and after approximately 16 hours the battery pack will be fully charged.

The sealed lead-acid battery operates best on shallow, less than 30% discharge cycles, or constant "trickle" charge with the recharger usually connected.

Replacement batteries are available; order HP 88014B Rechargeable Battery Pack.

To preserve the maximum capacity of your battery pack, charge it fully and operate as much as possible with the recharger connected.

WARNING

Do not short the battery. This will blow a fuse internal to the battery pack and make the pack inoperative.

Do not incinerate. The battery can burst if thrown into a fire.

Do not put within reach of children.

Do not disassemble the battery. The strong acid electrolyte sealed inside can burn your skin and clothes.

If the battery is accidently broken and the electrolyte (gelled sulfuric acid) leaks out, neutralize the acid with some available alkaline substance, such as ammonium solution or baking powder (sodium hydrogen carbonate) and wipe up the spill with a cloth.

In the event electrolyte contacts the skin, immediately flush with water and consult a doctor.

Rechargers

The rechargers listed next are recommended for use with the HP
88014B Rechargeable Battery Pack.

HP 82059B	90 to 120	United States
HP 82066B	210 to 250	Europe
HP 82067B	210 to 250	United Kingdom
HP 82067B Opt 001	210 to 250	Republic of South Africa
HP 82068B	210 to 250	Australia
HP 82069B	90 to 120	Europe

Chapter 3

THINGS YOU MIGHT WANT TO KNOW

Flexible Disc Usage and Handling

Congratulations on your selection of the HP 9114B 3 1/2-inch disc
drive. The 3 1/2-inch microflexible disc is safer and more reliable
than the larger flexible discs on the market because of its hard case
and automatic shutter. The 3 1/2-inch disc is maintenance free.
Here are some specific DOs and DON'Ts for the handling of your
discs.

Do

Back Up Discs Frequently

There is always a chance of losing data when
data storage devices are accessed. Causes of
loss of data include programming bugs,
operator errors, power failures, and hardware
failures. Data may also be lost due to flexible
disc contamination or wear. **One protection
against data loss is frequent backup of your
files onto other discs.** Store discs upright in a
dust free container. The box in which the
discs are shipped, or a similar container, is a
good choice.

Operate your system in a relatively clean environment

Airborne contaminants and particles accidently dropped onto the disc will cause your disc to wear prematurely and may cause unreliable data storage and retrieval operations. Some of the most common contaminants are dust, smoke, ashes, eraser crumbs, and breadcrumbs. NEVER ATTEMPT TO BLOW SMALL PARTICLES FROM THE DISC. Chemical vapors may also cause premature disc wear.

Maintain proper temperature and humidity

The proper operating range is 10°C (50°F) to 40°C (104°F) and 20% to 80% relative humidity. While temperature can be controlled, it may be necessary to make special provisions to keep the humidity in the proper range. Although the disc will continue to operate outside the normal humidity range, it will wear more quickly and will have a higher error rate.

Avoid magnetic fields

The data is stored on the disc magnetically, and can be erased by an external magnetic field. Avoid placing a disc near power transformers, magnets, large disc memories, motors or CRTs (Cathode Ray Tubes).

Don't

Touch the surface of the disc

The thickness of a fingerprint is enough to lift the head off the disc and cause errors. The oils in a fingerprint also collect dust which can cause the disc to wear faster.

Try to clean a disc
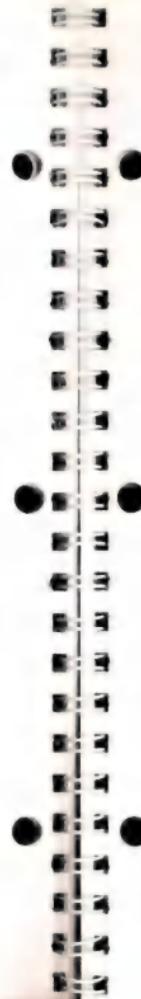
The inside surface of the disc jacket is covered with a special material that cleans the disc as it rotates. Any other method of cleaning can cause solvent damage to the media or scratch the disc, causing loss of data. If a disc becomes dirty or scratched, immediately transfer the data to a new disc and dispose of the old disc.

Labeling the Flexible Disc

When you order boxes of flexible discs (HP part number 92192A for a box of 10), you receive a packet of labels with the discs. Note that the labels come in a variety of colors. Position the label on the disc so that the colored portion of the label is folded over the lower edge of the disc. See Figure 3-1.

POSITION THE
LABEL HERE
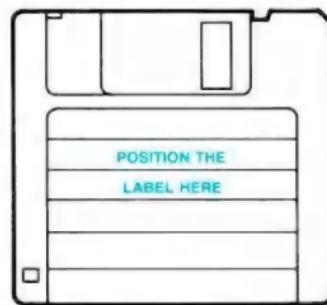
Figure 3-1. Usual positioning of the label on the disc

You can establish a color-coded system for cataloging your discs. For example, discs containing memos may be labeled in red while discs containing personnel files can have blue labels. Store your discs upright in a container so that the colored edge of the labels are visible. You may use the colors to select the category of discs you desire, and then read the labels to select the specific disc needed.

What is the Life Expectancy of a Flexible Disc?

The read write heads of the disc drive touch the disc. As a result, the flexible disc media does wear. The Media Monitor indication helps assure reliable operation.

Media Monitor

Through a feature called Media Monitor, your disc drive automatically monitors the cumulative use of each individual disc.

When the usage of a disc is approaching a level at which there is a risk of loss of data through normal disc wear, the disc access light on the front panel blinks and a clicking sound is heard. Once this point has been reached in the life span of a disc, read and write commands are still performed by the computer. However, after a command has been performed, the disc drive immediately resumes the warning indication.

When the Media Monitor warning occurs, immediately copy your disc. If you continue to use this disc, the disc drive will eventually automatically write protect the disc. After that time, you will only be able to read data from the disc or copy that disc.

Write Protect Error on Initialization

A motor speed check is performed when a disc is inserted into the drive. If the motor speed is on either side of the tolerance allowed, a Write Protect Error is generated and the disc cannot be initialized or used. If your drive is operating properly, this indicates a defective disc. Discard the disc.

Chapter 4

READ THIS WHEN YOU HAVE PROBLEMS

Caring for Your Disc Drive

Guidelines for Transporting the Disc Drive

The 9114B Disc Drive is a portable device, but transportation requires some care. A drop of more than 5 inches can damage the read/write heads. Also, do not move the disc drive when the disc access light is on (when reading or writing to the disc). The preferred method is to transport the drive in the following manner:

1. **Insert the plastic yellow or cardboard disc used in shipping the drive to you.** (If unavailable, order HP P/N 1535-4881.) A discarded or uninitialized disc, while not as effective as a plastic or cardboard disc, can also be used to help protect the read/write heads. DO NOT use a disc containing valuable data.

2. A system carrying case is available for the HP 110, HP Portable Plus, and HP 9114B. Order this case using HP part number 13269V. You should use this case when transporting your system.

Caring for the Case

The disc drive case is made from a white plastic material and is not painted. The rear panel has a durable, non toxic label. In the event of damage to the case finish, consult your HP Sales Office for touchup paints.

Before cleaning the case, disconnect the charger and HP-IL cables. Make sure that any disc is removed from the drive. Dampen a clean, soft, lint-free cloth in a solution of clean water and mild soap. Wipe the soiled areas of the case, making sure that no cleaning solution gets inside the case. For cleaning more heavily soiled areas, use a solution of 80% clean water and 20% isopropyl alcohol. Dry the areas that had cleaning solution applied with another clean, soft, lint-free cloth. Use a non-abrasive eraser to remove pen and pencil marks.

Warranty

The complete warranty statement for the U.S. and Canada is included inside the front cover of this manual. If you have questions concerning the warranty, please contact your dealer or the nearest HP Sales Office. In countries other than the U.S. and Canada, contact your dealer or the nearest HP Sales Office for the warranty statement.

Maintenance

Your disc drive does not require regular maintenance. However, the performance and life of the disc drive and the flexible discs depend on how carefully they are handled. Be sure to follow the disc care and handling guidelines presented in Chapter 3 and the environmental restrictions presented in the Specifications Table in Appendix 1.

What If Something Goes Wrong?

1. *What if the disc access light (next to the disc eject button) begins blinking and the disc drive makes a clicking noise?*

   The blinking of the disc access light and the clicking noise are a feature of your disc drive called the Media Monitor. This warning indicates that the disc currently in use in the blinking and clicking drive should be replaced. Immediately copy the worn disc and discard it. For further information about the Media Monitor, please see the "Media Monitor" section of Chapter 3.

2. *What if my disc drive does not pass the selftest? Selftest information is on page 2-7.*

   If your disc drive does not pass the selftest, take the following actions:

   A) Turn off your disc drive. Then turn the disc drive back on; this repeats the selftest.

   B) If the test light is still on, contact your dealer or the nearest HP Sales Office.

3. *When I try to initialize my disc, I get an error stating that the disc is write protected. What should I do?*

   First, check to make sure that you are not using a disc that you have write protected or that has been automatically write protected by the Media Monitor.

   When a disc is inserted to be initialized, the disc drive performs a motor speed check. If the motor speed is out of specification, a Write Protect Error is generated and the disc is not initialized. This indicates a defective disc. Discard the disc.

   Please note that if you receive a Write Protect Error on several discs in a row, your disc drive may not be operating properly. Contact your dealer or the nearest HP Sales Office.

4. *When I try to store information on a disc, I get an error stating that the disc is write protected. What should I do?*

   You are trying to store information on a disc that you have write protected. If you wish to write information on this disc, reverse the write protect tab on the disc (see Chapter 2). If you wish to keep this disc write protected, insert another disc.

   Also, the disc may have been automatically write protected by the Media Monitor. If the Media Monitor warning is on, the disc should be copied and discarded.

8. **What should I do if I get a message that says, "Disc Not Present", "No Disc Were Found", "Not Ready Error, Reading Drive ..." or "Bad Unit Error, Reading Drive ..."?**

A) Be sure the disc drive is turned on and your battery is charged.

B) Check your cables to make sure they are secure.

C) Be sure that you have a disc in the correct disc drive.

D) Be sure that the disc has been initialized.

E) If all this fails, you may have a bad disc. Try another disc.

What if I get an error message saying "Disc or Data Error, Reading Drive ?"

Your disc is probably worn or damaged. Try using other discs to see if you get the same message. If you receive the message on only one disc, copy the disc immediately and discard it (Please note that if the disc is worn or damaged, the copy may not work.) If you receive the same message on several discs, contact your dealer or HP Sales Office.

What should I do if I get a message that says, "Disc drive is empty, off, or undefined"?

A) Be sure the disc drive is turned on and your battery is charged.

B) Be sure that you have a disc in your disc drive.

C) If all this fails, you may have a bad disc. Try another disc.

9. **What if the battery doesn't last long enough for me to do what I want to do?**

A) Always start with a fully charged battery in your HP 9114B. Fully charging the battery requires connecting the recharger for approximately 16 hours (80% charge in 5 hours).

NOTE

You can operate the HP 9114B with the recharger plugged in. We recommend plugging in the recharger whenever possible to extend your battery's life.

B) Place the HP 9114B as the device as the last device on the interface loop. The **Out** cable from the HP 9114B should
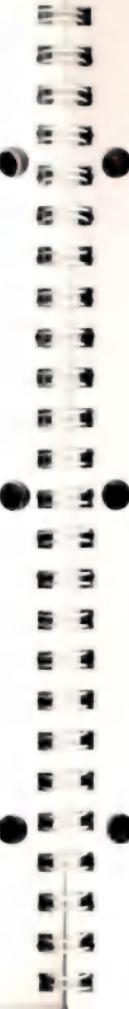
be the **In** cable to your computer. And don't forget to connect the other cable from your disc drive to the previous device in the loop. This positioning may keep the disc drive from turning on during printer or plotter commands.

C) If you don't have adequate battery life for your particular application after taking the above precautions, consider purchasing a spare battery pack (P N 88014B). Remember, these batteries can be charged from a wall outlet while outside the HP 9114B.

D) Also, if you are running your own programs, see the following technical information. You may be able to change your programs to improve the battery life of your disc drive.

The following chart tells you how long the battery will last. The chart is based on the amount of time in seconds between disc accesses (the amount of time the disc access light is off). The following assumptions have been made.

1) You always start with a fully charged battery.

2) Typical access time (disc access light is on) is approximately 5 seconds. If your access times are longer, the hours to discharge will be shorter.

9114B Battery Life vs. Time Between Access
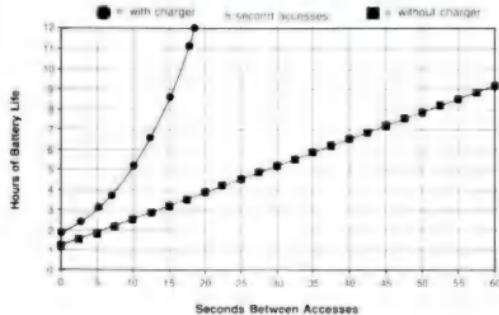
Technical Description of the HP 9114B Battery Life

In order to understand how the battery life of the HP 9114B is affected by the application, you need to understand the way the drive's hardware works. Basically, the HP 9114B's hardware can be in three different states. Each of these states uses different amounts of power. The events that cause the drive to switch from one state to another and the amount of power that is consumed in each state is explained below.

The three different states are sleep, active, and access. The first state, called the sleep state, is a very low power state in which all hardware is shut down except for the CMOS HP-IL integrated circuit and a small wake-up circuit. The second state is the active state in which all of the controller circuitry and all other drive electronics are powered. The third state, the access state, is when the flexible disc is being accessed. This state requires extra power to spin the motor and step the head. The approximate amount of current drawn from the battery in each state is shown next.

Sleep state	35 milliamps (disc access light off)
Active state	350 milliamps (disc access light off)
Access state	1000 milliamps (disc access light on)

The state the HP 9114B is in depends upon the activity on the HP-IL. The HP-IL integrated circuit used in the HP 9114B determines which HP-IL commands cause the disc drive to go from the sleep state to the active state. Certain commands are handled automatically by the chip and some required that the command be processed by the CPU on the controller board. This means that power must be applied to the controller board. A detailed list of the HP-IL messages that cause the disc drive to go from the sleep state to the active state follow.

Basically, two operations cause the transition from sleep to active state. The first one configures the loop with the auto addressing command. This requires the CPU to accept a loop address and pass on the next highest address to the next device on the loop. The second operation is addressing the HP 9114B to be a talker or a listener on the loop.

The commands sent over HP-IL depend on your computer and on the type of operations being performed by your computer.

HP-IL Commands Categorized As To When They Make the HP 9114B Go From The Sleep State To The Active State

Always	If Listener or Talker	If Listener or Talker or if Address Equals Device's Address	Never
NOP	Data	LAD (0-31)	IDY
LLO	End	TAD (0-31)	RFC
DCL	GTL		
PPU	SDC		
EAR	PPD		
IFC	GET		
REN	ELN		
NRE	PPE0 (0-7)		
AAU	PPE1 (0-7)		
LPD	DDL (0-31)		
SAD (0-30)	DDT (0-31)		
AAD (0-31)	ETO		
AEP (0-31)	ETE		
AES (0-31)	NRD		
AMP	SDA		
	SST		
	SDI		
	SAI		
	TCT		

HP 110 and HP Portable Plus

The HP 100 Series Portables can be reconfigured quickly. Therefore, every time the Portable begins talking to any device on the loop, the Portables send out an auto addressing command. This always happens if it has been over five seconds since the Portable last accessed a device on the loop. Auto addressing always wakes up any HP 9114B on the loop.

HP 71B

The HP 71B can be controlled to a great extent as to when it will send out auto address commands. It will assign addresses automatically only when it is turned on, and this can be disabled by setting an internal flag. The other area of concern with the HP 71B is how it determines which device is on the loop. If absolute loop addresses or assign codes are not used to specify the device on the loop, the HP 71B may have to search the loop sequentially for the proper device to use. This would require each device on the loop that has a lower address than the device that the HP 71B is searching for to send its device ID. This requires the HP 9114B to go into the active mode. For more information on HP-IL operation of the HP 71B, please refer to the HP-IL Interface Owner's Manual for the HP 71. The key is to use assign codes or absolute loop addressing.

HP 75

The HP 75 assigns addresses only with the ASSIGNIO command and the RESTOREIO command. The assignments made with the ASSIGNIO command are always used when addressing the devices. The HP 75 typically will not wake up the HP 9114B when talking to another device such as a printer.

HP Series 40

The HP Series 40 auto addresses the loop on every operation. This causes the HP 9114B to wake up on every operation to the printer or other devices.

Your disc drive can be repaired only by a trained service person. If you suspect that your disc drive is malfunctioning, contact your dealer or the nearest HP Sales Office.

How to Order Supplies

DESCRIPTION	HP PART NUMBER
Gray Double-Sided Micro Flexible Discs (10 discs/box)	92192A for 9114B
Recharger*	See footnote
HP-IL Cable	82167A 0.5 metre
	82167B 1.0 metre
	82167D 5.0 metre
HP 9114B Operator's Manual	09114-90005
Rechargeable Battery Pack	88014B

*Power connectors are dependent on delivered location. Please consult your dealer or nearest HP Sales Office if you need to order an Recharger.

Order supplies for your disc drive by contacting your dealer or the nearest HP Sales Office. You may also contact the Hewlett-Packard Computer Supplies Operation at the following address.

Direct Marketing Division
1320 Kifer Road
Sunnyvale, California 94086

Telephone: (800) 538-8787 toll free in the United States
(406) 738-4133 (in Canada)

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Appendix A

DATA LOGGING

If your application involves data logging:

1. The HP 9114B continues to operate for 7 seconds after it responds to a command on the loop (auto addressing, a disc read or write operation, etc.). The motor stops spinning after 2 seconds of not receiving a command and after 7 seconds the HP 9114B will shut down. This shut down indicates a very low power condition.

2. Continuous motor-spinning operation will run the battery down in about 80 minutes if the recharger is not connected.

3. The HP 9114B responds to the LPD (Loop Power Down) command by placing itself in a very low power consumption state (shut down).

4. Addressing a data source device (voltmeter) directly by its position number or two letter device code will not cause the disc drive to power up.

5. Store as much data into your host (controller) as possible and write only large amounts of data to the disc drive.

6. Operate the disc drive as much as possible with the recharger connected.

7. Operate the disc drive within its environmental specifications.

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Appendix B

TECHNICAL REFERENCE

Technical Specifications

Listed next are the electrical and physical specifications for the HP 9114B disc drive.

Number of drives	1	
Net Weight	2.68 kg (5.9 lbs)	
Height	75 mm (3.0 in.)	
Depth	200 mm (8.0 in.)	
Width	287.5 mm (11.5 in.)	
Interface	HP-IL	
HP Double Density Format		
Encoding:	MFM	
Rotational Speed:	600 RPM	
Bit Density @ 600 RPM:	Track 79 (Inside track)	
	8717 BPI	
Track Density:	135 tracks per inch	
Tracks per Surface:	80	
Surfaces used per disc:	2	
Capacity	HP 110,	Series 40 and 70
	Portable Plus,	
	IBM PC	
Bytes/Sector:	512	256
Sectors/Track:	9	16
Bytes/Drive (Formatted):	710 Kbytes	630 Kbytes
See note below.		

NOTE

All of HP's computers spare tracks for data reliability. The spared tracks are used as replacements for bad sections of the disc to assure reliable data storage. As a result, the actual usable space on the HP 9114B is 710 Kbytes drive.

B-1

Access Time
Track-to-Track Seek   15 ms/track
                                       plus 42 ms settling
Maximum Track-to-Track Seek   1242 ms
                                       (80 tracks)
Average Track-to-Track: 447 ms
Maximum Rotational Latency: 100 ms
Average Rotational Latency: 50 ms
Spindle Motor on time: 400 ms
Maximum Data Access Time
(Seek plus Latency
plus Motor on time):   1742 ms
Average Data Access Time: 497 ms (motor on)
Maximum Sustained Transfer
Rate: 6 Kbytes/second

Environmental Specs
Operating Limits
Temperature: 10°C to 40°C
                                       (50°F to 104°F)
Humidity: 20 to 80% with maximum wet bulb
                                       temperature (non-condensing) not
                                       to exceed 29°C (85°F)
Altitude: 0 to 4572 m (0 to 15,000 ft)

Non-operating Limits
(Storage and Transit)
Temperature: -40°C to 60°C
                                       (-40°F to 140°F)
Altitude: -304 to 15240 m (-1000 to 50,000 ft)

NOTE

Your disc drive is designed for operation in a typical office
environment. Use of the equipment in an environment containing
dirt, dust, or corrosive substances will drastically reduce the life
of the disc drive and of the flexible discs.

Appendix C

GLOSSARY

ADDRESS	A number that identifies the exact location to which your computer can send data or from which your computer receives data. Just as you have a unique home address, your computer, disc drive, plotter and printer must each have a unique address.
BACKUP	A backup is a duplicate copy of a disc made in case the original disc is lost or damaged.
BOOTING	Booting up your computer puts it in a ready-to-run condition. The computer literally "pulls itself up by it's bootstraps" and gets ready to go. (Booting loads the operating system and utilities.)
BYTE	A byte is used to represent one character, such as a single letter, number, or other symbol.
CABLE	Cables provide the connection between computers and peripherals (printers, plotters, and disc drives). The cable used in this manual is the HP-IL.
CONFIGURATION	Configuration is the way you let your computer know which disc drive it is talking to, where the disc drive is on the bus, and which drive you want the disc drive to access.
CRT	Acronym for cathode ray tube. The CRT is the video screen of the computer.
DIRECTORY	The table of contents for the files stored on a disc.

| DISC | A circular plate of magnetically coated material used to store computer information. The disc is similar to a phonograph record that stores programs and data instead of music. HP's 3 1/2-inch flexible disc is enclosed in a plastic jacket.

A disc may be flexible or hard. The flexible disc may also be single-sided or double-sided. |
|---|---|
| DISC DRIVE | A device that allows a computer to read data that is stored on a disc or write data on a disc. |
| FORMATTING | The process by which a disc is prepared to receive and store data. Also known as "initializing."

If you think of your disc as being like a filing cabinet, formatting is equivalent to getting an empty file cabinet and preparing the cabinet for use. First, you check the cabinet for any damage. Similarly, the disc drive checks the disc for any damaged areas in which data cannot be stored. Second, you place hanging folders and dividers in your file cabinet. Likewise, the disc drive sets up storage areas on the disc. Finally, you label your filing cabinet so that you know what is in each drawer. Similarly, the disc drive sets up a directory on your disc. |
HARDWARE	The physical parts of the computer system; the computer and the peripheral devices.
HEAD	The part of the disc drive that reads data from your disc and writes data onto your disc.
HP-IL	The HP-IL is a connector that allows the computer and the peripherals to communicate.
INITIALIZING	The process by which a disc is prepared to receive and store data. Also known as "formatting."
INTERFACE	The interface makes communication possible between the computer and its peripherals.
INTERLEAVE	Interleaving a disc is a method of alternately numbering sectors on the disc to improve data acquisition efficiency. See the interleave section of your computer programming manual for additional information.

KBYTES	A unit of measurement for memory storage. One Kbyte is equal to 1,024 bytes (or 1,024 characters). Also called "K" or "kilobyte."
LOAD	To read programs into a computer.
MEMORY	The size of the computer's brain. Memory is the combination of hardware and/or discs on which data is stored.
MFM	Modified frequency modulation (MFM) is a method for storing data on discs.
PERIPHERALS	Devices that are external to and controlled by the computer. Peripherals are so called because they are not part of the computer (e.g. tape drives, disc drives, printers, and plotters).
PROGRAM	A set of instructions or steps telling the computer how to handle a problem or task.
READ/WRITE HEAD	The part of the disc that reads data from your disc and writes data onto your disc.
SOFTWARE	A computer program or set of programs.
UTILITY	A utility is a program that performs a task required by most users. For example, most users need to make copies of discs. Therefore, the copy utility is a program that tells the computer how to copy discs.
WRITE PROTECT	A method of protecting disc information from being erased or overwritten.

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Worldwide Sales Offices

Hewlett-Packard products are sold and supported worldwide through Hewlett-Packard Sales and Service Offices and through dealers.

- *To contact Hewlett-Packard:* There are more than 240 Hewlett-Packard Sales and Service Offices worldwide. To locate the one nearest you, your telephone directory or contact one of the major Hewlett-Packard offices listed.

- *To contact a dealer:* Call 800/FOR-HPPC in the U.S. or call your local Hewlett-Packard Sales and Service Office. Ask for "Personal Computer Dealer Sales."

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* North Ryde, N.S.W.
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* Blackburn, Victoria
Phone: 03/890-6351

Austria
* Vienna
Phone: 222/3516210

Belgium
Supplies: 02/762-3200
* Brussels
Phone: 02/762-3200

Brazil
* Alphaville, Barueri
Phone: 011/421-1311

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Software Assistance:
1-800/267-6115
(in English and French)
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Phone: 403/452-3670
* Richmond, British Columbia
Phone: 604/270-2277
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Phone: 416/678-9430

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* Jyvaskyla
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Phone: 81/338785

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